

## **REMARKS**

In view of the above amendments and the following remarks, reconsideration of the rejections and further examination are requested. Upon entry of this amendment, claim 25 is amended and claim 32 is added, leaving claims 25-29, 31 and 32 pending with claim 25 being independent. No new matter has been added.

### ***Interview***

Applicants appreciate the interview granted by Examiner Verderame on October 21, 2009. In the interview, amendments to overcome the 35 U.S.C. §112 rejection were discussed and Applicants position that the claims are allowable over the cited prior art was discussed. In particular, Applicants' representative and the Examiner discussed that the prior art alone or in combination does not disclose or render obvious the claim element: " $M_k$  is at least 2 atom% greater than  $M_{k-1}$ ".

### ***Rejections Under 35 U.S.C. §112, second paragraph***

Claims 25 and 26 have been rejected under 35 U.S.C. 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. In particular, the Examiner states that it is unclear which layers are being referred to with regard to  $M_k$  and  $M_{k-1}$  because, according to the Examiner, earlier in claim 25 the metal content in the n-th layer is described as  $M_n$  and the k-th layer is never recited.

Claim 25 has been amended to overcome this rejection. In particular, as discussed with the Examiner, claim 25 now recites that  $M_k$  and  $M_{k-1}$  are the compositional ratios of the material M in a  $k^{\text{th}}$  information layer and a  $k-1^{\text{th}}$  information layer, respectively, with k being an integer satisfying the relationship  $2 \leq k \leq n$ .

Additionally, Applicants note that the Examiner's assumption that  $M_k$  and  $M_{k-1}$  intend to represent  $M_k$  and  $M_{k-1}$ , respectively, is incorrect. In fact, M represents a general expression for the compositional ratio of M in an arbitrary  $k^{\text{th}}$  layer, where k is an integer satisfying  $2 \leq k \leq n$ , and  $M_{k-1}$  represents the compositional ratio of M in the  $k-1^{\text{th}}$  layer, i.e. the layer next to the  $k^{\text{th}}$  layer, which is further from the light incidence plane than the  $k^{\text{th}}$  layer. In other words, the recitation in claims 25 and 26 is meant to represent a general relationship between each layer of

the claimed recording medium and not just between the nth and n-1<sup>th</sup> layers.

Therefore, Applicants respectfully submit that the claims as now pending are clear, and request that this rejection be withdrawn.

***Rejections Under 35 U.S.C. §102(b)***

Claims 25 and 27-29 have been rejected under 35 U.S.C. 102(b) as being anticipated by Uno et al. (WO 2004/027770; U.S. 2005/0253210 used as an English translation).

Applicants respectfully traverse this rejection and submit that the claims as currently pending are allowable over the cited prior art. Specifically, claim 25 recites an optical information recording medium, comprising a first information layer, a second information layer, ..., and an n-th information layer (where n is an integer of 3 or greater), in that order, on a substrate, wherein all of the information layers have a recording layer composed of a material containing Te, O, and M, and  $M_n \geq \dots \geq M_2 \geq M_1$  and  $M_1 \neq M_n$  are satisfied, where  $M_1$  is the compositional ratio of the material M in the first information layer,  $M_2$  is the compositional ratio of the material M in the second information layer, ..., and  $M_n$  is the compositional ratio of the material M in the n-th information layer, wherein  $M_k$  is at least 2 atom% greater than  $M_{k-1}$  where  $M_k$  and  $M_{k-1}$  are the compositional ratios of the material M in a k<sup>th</sup> information layer and a k-1<sup>th</sup> information layer, respectively, with k being an integer satisfying the relationship  $2 \leq k \leq n$ .

The cited prior art fails to disclose or render obvious such a medium. As indicated in the Office Action, the Examiner recognizes that Uno discloses a recording medium with 4 information layers, each having a recording layer containing Te, O, and Pd (which corresponds to material M recited in the claims). The Examiner further recognizes that, in such a recording medium, the compositional ratio of Pd in the first recording layer, which is nearest to the light incidence plane, is 1% higher than that of the second recording layer, which is further from the light incidence plane. (See medium (2) of Table 2). Thereafter, however, the Examiner asserts that Uno anticipates the claimed invention because "1% touches the claimed range of at least 2%". (See Page 4 of the Office Action)

Applicants respectfully disagree and, as discussed with the Examiner, submit that 1% is less than at least 2%. Moreover, it is clear in Uno that the compositional ratio of Pd in one recording layer differs by exactly 1% (not *at least* or *more than* 1%) from its neighboring layers. Anticipation under §102 can be found only when the reference discloses exactly what is claimed.

MPEP §2131.03. Thus, it is clear that the disclosure of 1% in Uno does not touch the claimed range of *at least 2%*, and Uno does not disclose the claim element that  $M_k$  is at least 2 atom% greater than  $M_{k-1}$ .

Moreover, there is no reasoning in the prior art to modify Uno such that it would have rendered claim 25 obvious. Therefore, Applicants submit that independent claim 25 and its dependent claims are allowable over the cited prior art.

### ***Rejections Under 35 U.S.C. §103(a)***

Claims 26 and 31 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Uno in view of Kitaura et al. (U.S. 2002/0022105) and Yasuda et al. (U.S. 6,221,455).

Applicants submit that this combination of references fails to disclose or render obvious the claim element “ $M_k$  is at least 2 atom% greater than  $M_{k-1}$ ”, let alone the claim element  $M_k$  is at least 4 atom% greater than  $M_{k-1}$ .

In the Office Action, the Examiner asserts that Uno (*See* medium (2) of Table 2) discloses a four-layer optical recording medium having recording layers which contain Te, O, and Pd (which corresponds to metal M in the claims), wherein the concentration of Pd in the recording layer nearest to the light incidence plane is 1% greater than that in the next closest layer to the light incidence plane (*See* Page 5 of the Office Action), and Kitaura (*See* paragraphs [0043]-[0044]) discusses the effects caused by adjusting M-atom concentration in a recording layer, e.g. change of crystallization speed in the recording layer and reflectance change between amorphous and crystal states, based on which Kitaura further describes that the amount of M-atom added should be within 1 to 35 atomic percent.

Based on these two points, the Examiner concludes that it would have been obvious for one of ordinary skill in the art to modify the recording medium of Uno in view of the teachings of Kitaura, i.e. to adjust the amount of M-atom in the recording layers between 1 to 35 atomic percent, so as to find the optimum operating conditions for the recording medium. Additionally, the Examiner asserts that the claimed invention does not result in any unexpected effects and, therefore, is not patentable.

The Applicant respectfully disagrees with the Examiner. First, although Uno may disclose a four-layer recording medium that satisfies the relationship of  $M_k$  is 1 atom% greater than  $M_{k-1}$ , Uno does not intentionally suggest such a relationship and does not suggest modifying such a

relationship to increase the difference in M-atom concentrations. More specifically, with respect to the four-layer recording medium (i.e, medium (2)), Uno explicitly describes (See paragraph [0049]) that:

" ... it is preferable to adjust the conditions of each of the recording layers such that the difference in the transmittance between the state A and the state B can be reduced while maintaining the amount of change in the optical characteristics. In this embodiment, at least one of the first through third recording layers 102, 202, and 302 is formed of a material having a complex index of refraction that is different from the complex index of refraction of the fourth recording layer 402. More preferably, all of the first through third recording layers 102, 202, and 302 are formed of materials having a complex index of refraction that is different from that of the fourth recording layer 402 ...."

Thus, Uno simply suggests that the materials used in the layers closer to the light incidence plane should be different from the material used in the layer furthest from the light incidence plane. Uno fails to disclose a specific relationship involving M-atom concentration. The modification of M-atom concentration is merely used for ensuring that the materials are different from each other.

Thus, Applicants submit that Uno does not provide any reasoning to modifying the M-atom concentration to render the claimed element "M is at least 2 atom% greater than  $M_{k-1}$  obvious". In fact, Uno is simply silent regarding the specific relationship between each of the layers in the recording medium.

Applicants submit that Kitaura does not cure this deficiency of Uno. In particular, Kitaura discloses modifying the M-atom concentration in a recording layer to adjust the crystallization speed and reflectance change between the amorphous state and the crystal state of the recording layer. Such teaching relates to only individual layers and does not disclose the relationship between each of the layers. Moreover, Kitaura does not disclose that the M-atom concentration in a layer should be at least 2 atom% greater than the M-atom concentration in the next layer that is further from the light incidence plane.

Additionally, Applicants submit that there is no reasoning in the prior art to modify either Kitaura or Uno, or the combination thereof, such that this combination would have rendered claim 25 obvious. Therefore, Applicants submit that independent claim 25 and its dependent claims are allowable over the cited prior art.

Furthermore, the present invention, as recited in claim 25, includes specific M-atom

concentrations in the recording layers so as to achieve good sensitivity even in the recording layers far from the light incidence plane. Neither Uno nor Kitaura addresses this problem that is solved by the claimed invention. Specifically, while Uno focuses on reducing *"the difference in the transmittance between the state A and the state B ... while maintaining the amount of change in the optical characteristics"* (See paragraph [0049]), Kitaura adjusts M-atom concentration only to address issues of crystallization speed and reflectance change (See paragraph [0044]). As such, the claimed invention solves a problem that is not recognized in the references and the result achieved by the claimed invention is clearly unexpected.

For at least these reasons discussed above, the Applicant submits that the claimed invention is allowable over the cited prior art.

### ***New Claim 32***

Applicants submit that new claim 32 is allowable for the reasons set forth above, since claim 5 is dependent from claim 1. Moreover, as discussed with the Examiner, the cited prior art clearly fails to disclose or render obvious the element " $M_k$  is at least 5 atom % greater than  $M_{k-1}$ ."

### ***Conclusion***

In view of the foregoing amendments and remarks, all of the claims now pending in this application are believed to be in condition for allowance. Reconsideration and favorable action are respectfully solicited.

Should the Examiner believe there are any remaining issues that must be resolved before this application can be allowed, it is respectfully requested that the Examiner contact the undersigned by telephone in order to resolve such issues.

Respectfully submitted,

Haruhiko HABUTA et al.

/Jeffrey J. Howell/

By 2009.10.23 13:52:24 -04'00'

Jeffrey J. Howell

Registration No. 46,402

Attorney for Applicants

JJH/kh/ekb  
Washington, D.C. 20005-1503  
Telephone (202) 721-8200  
Facsimile (202) 721-8250  
October 23, 2009